Project Title

MARKET ACCESS TO CLEAN COOKING TECHNOLOGIES IN KENYA

Project/Assistance Agreement Number

XA 83398501

Final Report to the U.S. Environmental Protection Agency for the period 2009 to 2011

Prepared by:

MARGARET C.A. OWINO

REGIONAL DIRECTOR SOLAR COOKERS INTERNATIONAL (EA)

P.O. BOX 51190 – 00200

NAIROBI, KENYA

Date

28TH SEPTEMBER 2011

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Project Number: XA 83398501

1.0 Executive Summary

1.1 Overall Project Purpose and Goals

PURPOSE: UPSCALLING MARKET ACCESS TO CLEAN COOKING TECHNOLOGIES FOR HEALTH AND WEALTH IN KENYA.

Project Goals: Expand the sales and marketing network for solar cookers*, upesi* stoves and retained heat cookers. Strengthen local access to smoke reducing cooking technologies that complement solar cookers. Reach at least 3,000 households by the end of the project.

1.2 Need / Project Significance

The area, Kadibo in Nyanza Kenya, is a flood prone plain with bear minimum vegetation. The community relies on purchased biomass and agricultural residues for cooking fuel. Prior studies by PA (2008 – 2009) revealed that there were high incidences of smoke related diseases in the area. There were limited economic development opportunities for Women.

1.3 Summary of Major Activities Completed:

Secured funding from USEPA and SCI, signed agreements with partners and the community, conducted market survey with partners, recruited and trained business women, purchased and stocked technologies in project area, identified quality producers, enhanced basic knowledge and awareness on the dangers of indoor air smoke. Sold stoves, installed stoves, monitored usage, maintenance of stoves, progress reviews, documentation and reporting, final evaluation.

1.4 Summary of Major Accomplishments / Results

There is 91% awareness on the dangers of in door air pollution, 2547 households were reached with clean cooking and lighting technologies. From 8 women 42 others became installers and promoters of stoves. Demystified fear of loans and enabled savings through Village Savings and Loans strategy (VSL). Improved community health as well as public and social status by women in the project.

1.5 Conclusion(s)

Offering a menu of stoves is an innovative approach to stoves' commercialization. Combining public education and enabling access to local capital generated within the community enabled asset acquisition, including stoves and solar lamps. This strategy is a boon to project sustainability. From the final smoke monitoring activity it is evident that adoption and use of improved, clean cook stoves enhances household health and wealth.

2.0 Project Approach, Goals, and Objectives

This section should describe the approach taken in this project. In addition, list and briefly describe the project goals and objectives as outlined in your approved grant application.

2.1. Goal 1: Expand the sales and marketing network for solar cookers, *upesi* stoves and retained heat cookers.

SCI's pilot project in the area was in one of the 8 locations (west K'ochieng') where 8 women were recruited and then trained thereafter were given the title (Solar Cooker Representatives – SCOREPs.) in this project they only promoted the solar cookers. The USEPA project as a scaling up project covered all the 8 locations, each woman was charged with promotions and sales per location. In turn, each SCOREP identified several other women who were trained as installers ending with a total of 36 women in the project by June 2011. The 36 women have had an opportunity to earn an income / commission by stocking and installing stoves in the designated locations.

In addition to the women acting as mobile sales points, they were also engaged in marketing / promoting the stoves namely, *Upesi, Uhai*, solar cookits, retained heat cookers and solar lamps towards the end of the project.

2.2 Goal 2: Strengthen local access to smoke reducing cooking technologies that complement solar cookers

Sourcing for assembled quality solar cookits, stocking other types of solar cookers such as Pulsee, SK 14 and box cookers, training the promoters on how to make retained heat cookers, adapting to the local situation and encouraging home made retained heat cookers e.g. (hole on the ground, basin retained heat cookers, sourcing for and stocking affordable solar lamps, training on quality recognition and installation of *upesi* stoves, innovative ways of creating and securing eve-spaces, securing funds to serve the vulnerable members too.

2.3 Goal 3: Reach at least 3,000 households by the end of the project.

After a request by the two project partners to USEPA, the project was extended by another 7 months to afford time to meet project goals. By end of June 2011, the following was achieved:

- 582 solar cookits, 2,126 ***upesi*** stoves, 145 – retained heat cookers , 49 – uhai stoves z(charcoal stoves), 23 – SOLAR LAMPS
- A total of 2,547 households were reached out of 3,000 expected households. This meant that the goal was achieved by 85%. The sub goals of individual interventions was surpassed in relation to ***Upesi*** stoves, under achieved by the solar stove at 29% and retained heat baskets at 73% , while charcoal stoves and solar lamps were additional interventions enhancing the numbers of interventions in the households.

3 Project Activities and Results

3.1. Major project activities completed over the course of the project.

Activity	Verifiable indicator
Signing of final agreements on project funding	Signed project agreement document with USEPA
Signing of a partnership agreement with Practical Action and developing a common work plan,	Letter of agreement filed, Joint work plan
Gaining community acceptance by consulting elders	Copies of letters to the area administration
Establishing and equipping project site office and store	Site office in Kadibo market, furniture, computer and printer purchased.
Capacity building for the SCOREPs to increase their skills and knowledge	3 training workshops (how to make, use and maintain retained heat cookers, how to make quality installation of *upesi* stoves and create eve – spaces, how to assemble Cookits and test water safety). Training workshop reports.
Assigning then to specific work locations	All the 8 women had initially been recruited from one location; they were each assigned to a location to cover all the 8.
Continuous networking with relevant agencies, government departments etc	Joint activities with local administration – chiefs, school principals, health workers, ministry of agriculture, V – Red, VI Agro forestry, Nyando council. Sharing reports, attending local review meetings on area's development.
Development and distribution of educational materials	Flyers, 2009, 2010 and 2011 calendars, brochures, t- shirts, caps, features in SuNews, Solar Cooker Reviews, local language booklets on use and maintenance of solar cookits, WAPIs.
Linkages with MFI	Agreement with VI – Agro forestry to train and found Village Savings and Loans groups – total established (8) groups formed there were non before.

Radio spots and programs	10 radio spots and programs CDs available
Market stimulation and promotional activities	Market survey report, technology demonstrations 47 public demonstrations, 390 group demonstrations, talks to institutions
On site stocking of stoves	At any given time the site store had not less than 100 solar cookits and pots, 5 uhai stoves, 5 upesi stoves and others in the field. Filed stock – take cards.
Sale of stoves	A total of 582.solar cookits sold, 7 box cookers , 2126 upesi, 145 retained heat cookers File records and sale receipts.
Stove installation and creation of eve- spaces (stove installation involves proper positioning of the stove in the cooking area or kitchen where there is a draught and air circulation since it is a fixed cooking position)	This was a paid for service by the buyer to the installer and for every upesi stove installed an eve space was also created to enhance smoke extraction should there be no window. A total of 2126 stoves were installed and 1808 eve – spaces created.
Testing of stove performance	Since there are no protocols for testing solar cookers, only comparative cooking and water boiling tests were undertaken using different solar cookers. Also tests were on performance of a homemade fixed hole – on the ground retained heat cooker and a basket retained heat cooker. Reports filed.
Monitoring, evaluation and reporting	The monitoring structure – Regional Director, project officer, supervisors, SCOREPs, installers. Each level prepared monthly work – plans, when approved, activities would be carried out and then progress reports submitted. Monthly planning meeting minutes, progress reports and quarterly reports shared with donors, monthly budgets and expense reports. Review meeting reports, mid term review and final project evaluation report.

3.2. Major results /outcomes (quantitative and qualitative) obtained towards achieving your project goals.

Quantifiable project results	**Numbers**
People with knowledge about the dangers of in door air pollution in Kadibo	**70,000**
Households educated on and using interventions that reduce indoor air pollution Number of people with reduced indoor air pollution	**2,574** **15,444**
Numbers of institutions / small businesses using pollution reducing interventions	**24**
Numbers of vendors/ installers / SCOREPs doing stoves business	**45**
Improvements in quality of life - (These are anecdotal see annexes)	As per the final evaluation findings: improved hygiene around the cooking area, families bonding (even husbands can sit in kitchens to discuss issues, or return home early), , improved incomes by stove sellers, meeting family needs from savings made by not buying fuel wood all the time or paraffin for lighting, VSL's . Enhanced community knowledge and skills on issues of smoke and health and environmental consciousness. Improved community cohesion from stakeholder consultation forums, networking, and exchange of ideas. Emergence and increase in number of entrepreneurs doing a variety of businesses. New kitchens constructed so that the new stove can be installed.
Reduction in incidences of disease severity in Kadibo	Less prevalence of respiratory diseases symptoms reported in the health centers

3.3. Summarize the previous household energy and health situation of the target population and demonstrate how this project improved their health, livelihood, and quality of life.

3.3.1 Describe the current awareness of the negative impacts of inefficient and unhealthy cooking and heating practices and available solutions compared to project initiation.

Current awareness levels are rated at 91% (final evaluation report August 2011). This is due to the use of several strategies and approaches in educating the public and raising awareness. Use of women to pass on the message since in the Kadibo community, cooking is a women's activity. Use of radio programs in local language, flyers and calendars all translated into local language, door to door campaigns, songs, skits, posters with data on dangers of smoke. The high level of awareness is evident in all age groups from young to old men and women to school going children, this is was observable from the fact that the children are familiar with the technologies, they can name them, state where they have seen them and if they have used them or eaten foods cooked using the interventions.

Prior to the project, awareness that smoke is a silent killer was very low at 25 % now stands at 91%.

3.3.2 Describe the increase in demand that was created as a result of your project.

Increase in demand was evidenced by the number of sales beyond the project scope / area, in addition to even men setting up stoves business*. Increase of sales beyond the project area, Musoma in Tanzania with Global Resource Alliance organization. Jinja, in Uganda with Light Gives Heat organization*. ***Mama na Dada*** Ndori Kenya. Banana women group Mbita support group and Cham Kacha all in Mbita. Bondo, Kisii and Homa Bay MSF(multi-stakeholders forums)

The increase also evident from the numbers of stoves purchased for stocking with local installers – moving from 2 to 5 and eventually to 10 stoves per month.

3.4 Describe the commercial enterprise that was scaled up during this project

Beginning with 8 women who were doing business in other products, SCI – USEPA project has ended up with 45 women and 2 men who are well known in the community as stove promoters. At each level, there was a commission of profit kept by the SCOREP / installer. Installation service was 50/= shillings, from the sell of the ***upesi*** the seller kept 50/= and from the sale of the cookit one kept 140/= (1.5$), and from the fireless as well.

The project scope was in all 8 locations with a population of 61,326 (2009 census)

The Kebuye tin smiths, Keyo Women Group in Kisumu, Amani pottery in Siaya, Dismas Onyango sales Kerosene in Rabuor market, Leah a SCOREP used to make aloe herbal soap but has expanded to assembling stoves, fireless baskets, Leonida kept chickens and rice farming she has bought a generator and has expanded her acreage of rice and number of chickens she is keeping

3.5. **Describe the performance of the technologies, fuels, and/or practices that were promoted and how they evolved over the project period. What is the fuel wood consumption compared to the local traditional cooking practices**? What test methods were used to evaluate the performance of your stoves (e.g., water boiling test, controlled cooking test, kitchen performance test)? What did you learn from these tests and how did you use these test results to improve your program?

How are your stove(s) performing? *Please provide information on the type of laboratory and field testing you have performed to determine the effectiveness of your stove(s).*

Type of Stove	**Test Performed (CCT)**	**Date**	**Emissions**	**Fuel Use**	**Other Indicators Used**
Cookit	Baking cake took 2hrs	14/10/2009	None	Sun	
Uhai	Baking took 3.5 hrs,+ charcoal had to be bought, lit and the use of two pot when baking.	14/10/2009	Yes as it was being lit.	Charcoal	Burnt aroma of the cake
Upesi portable	Baking took 4 hours. Buying firewood time to light up and get hot coals, the use of two pots when baking. It had to be attended to and to maintain temperatures.	14/10/2009	While in process of lighting and getting hot coals	Firewood	Burnt aroma of cake
Type of Stove	**Test Performed (WBT)**	**Date**	**Emissions**	**Fuel Use**	**Other Indicators Used**
Cookit	Pasteurization of 3ltrs of water took 2hrs 50min	11/11/2009	None	Sun	WAPI melts at 65 Centigrade
Pulsee	Boiling 3ltrs of water took 21mins.	11/11/2009	None	Sun	Bubbles
Parabolic	Boiling 3ltrs of water took 39mins.	11/11/2009	none	sun	Bubbles

How are your stove(s) performing? *Please provide information on the type of laboratory and field testing you have performed to determine the effectiveness of your stove(s).*

Type of Stove	Test Performed WBT	Date	Emissions	Fuel Use	Other Indicators Used
Gas stove	Water pasteurization of 5 litres of water. It took 45mins	8/2/2010	Bubbles & vapour	Gas	WAPI melted at 65%c
Cookit	Water pasteurization of 3 litres of water. It took 3 hours	5/3/2010		Sun	WAPI melted at 65%c

How are your stove(s) performing? *Please provide information on the type of laboratory and field testing you have performed to determine the effectiveness of your stove(s).*

Type of Stove	Test Performed KPT	Date	Emissions	Fuel Use	Other Indicators Used
Upesi	Kitchen Performance Test	30th June 2010	Smoke at lighting and	firewood	Wight of firewood - 6kgs at 13hrs 18min. 6kgs

	Cooking ugali from a cold start.		some during cooking		• Time taken to light the stove 10 mins. • 15 mins to bring water to rolling boil • It took 10 min for cooking process to completion. • Weight of firewood after and remaining hot coals. It took 0.8kg to cook the ugali (6kgs-5.2=0.8)
3 stones	Kitchen Performance Test	30th June 2010	Smoke at lighting time	firewood	Weight of firewood 6kgs at 13hrs 18min. 6kgs 30 mins to light the stoves 13 min for the water to come to rolling boil 6 min to cook the ugali Weight of remaining firewood and hot coals. It took 1.5kg to cook the food(6kgs-4.5=1.5)
Conclusion					The Upesi still performed better at conserving firewood despite taking longer to finish the cooking.

- The tests generated knowledge that was included in the flyers to educate the communities.
- The results of the tests enabled increase in sales and convinced those in doubt about the performance of the interventions.
- The tests convinced people that using the interventions resulted into saving income for other felt needs.(see picture of piggy bank savings)
- Since there were no protocols for testing solar cookers, we could only undertake comparative tests with different solar cookers and demonstrate that some were fast but required tending to while others were slower, needed no constant attention and got the job done eventually.

3.6 Describe the manufacturing process and methods for assuring quality control of the stoves.

- The SCOREPs were trained on quality recognition for upesi and retained heat cookers and also got them ready made from assured producers.
- Other stoves e.g. the Cookit came already assembled but bore the mark of quality from the OYWA innovation (PAWII Awards 2005 Ghana) Pan African Women Inventors and Innovators Award. This is the coloured cloth binding on the edge of the CooKit, it makes it more durable – up to 3 years with good handling. Solar lamps were purchased ready made with the quality mark of Kenya Bureau of standards and performance testing and recommendation of Lighting Africa project. These came with a one year guarantee and any defaults have been replaced.

3.7. Describe any IAP monitoring and evaluation protocols (and/or equipment) you used and any results from M&E activities.

- With our partners Practical Action, smoke monitoring was performed at the end of the project using ***Gas Badge pro instrument.*** A mid term monitoring activity failed to take off since the partner too long to secure the instuments.
- Other than the above home visits during the project life served as occasions for monitoring stove and eve -space performance with regards smoke extraction from the house hold. This was by observation.
- Feedback from customers and referrals made by them.
- Comments such as *" I can now sit with my wife and chat as she cooks since this stove was installed as it produces less smoke than the previous traditional stove"*

3.8. Describe your environmental and health outcomes and how you tracked and measured progress in those areas.

Increase in vegetative cover in the area. Due to the reduction in the need to forage for biomass fuels. Less smoke emitted to the environment hence reduction in global warming at the community level.

Improved environmental consciousness in the community due to intensive public education campaigns resulting into 91% awareness. Use of less biomass has enabled regeneration of shrubs, home and garden fences and even some soil conserving plants like aloe Vera and sisal. The general hygiene around the kitchens and cooking areas are clean and to a significant extent use of improved stoves and other complementing technologies has helped reduce green house gas emissions.

4 Partnerships/Collaboration

Describe collaboration with outside organizations (i.e., local, regional and national governments, NGOs, academic institutions, others) that assisted you in this project and summarize their role on the project.

Government departments:	
• Ministry of Agriculture	Access to Government plans use of planned events to demonstrate stoves
• Ministry of Education	Access to students and teachers for knowledge and skills sustainability
• Ministry of Public Health and Sanitation	Health monitoring, complimenting public education on dangers of smoke.
• Provincial Administration	Community entry, security and support as these are opinion leaders. Use of their public forums " barazas" Recognition of project and shared reports on the development progress of the area.
Other Development partners / agencies	
• VI Agroforestry	Training and institutionalizing the Village savings and Loans strategy, local capital generation and business sustenance.
• VIRED, VI SSCI, UN HABITAT, KASDEG	Shared events for promotion and public awareness, support to the program
• Ramogi Institute of Science and Technology	Seeking serious partnership and including household energy technologies in their curriculum.
• Churches	Access to their members - use to give talks on dangers of smoke and reach members in a consistent manner.
• Kadibo community	Access and cooperation and allowing wives to be part of the project implementation as promoters and installers, and for buying and using the technologies.

• Lift Up Africa, Nancy Ellen Crooks Foundation and American Peace Corps, • Suppliers	Funding to enable the vulnerable acquire stoves and enjoy the benefits of reduced exposure to indoor air. Keyo women group, Nduru women group for quality upesi stoves, Clemrose for fireless baskets, Pressmasters, Dhodhia for carton materials and reflector foils and Androclovi for the glue.
• Contractuals • Practical Action (EA) • Apptech consultants • International and regional conference organizers • Radio Nam Lolwe and Radio Victoria • Light Gives Heat (Uganda) and Global Resource Alliance(Tanzania)	For quality assembly of CooKits For undertaking the smoke monitoring at the end of the project to verify project impact For undertaking the final project evaluation For enabling dissemination of project strategies and sharing them globally. Enabling outreach to a wider varied audience on the gravity of the issue at hand- dangers of indoor air pollution and how it can be alleviated. Extending project benefits beyond the border.

4.2. Summarize the contribution of partners (i.e., financial, other) towards achieving your project goals.

- USEPA gave us the bulk of the funding at US$ 150,000
- And SCI US$ 80,000.
- Lift Up Africa US$ 1,000 to enable the vulnerable acquire the interventions
- Practical Action provided base line data on smoke levels in the community and fuel measurements

4.3. Discuss how the Partnership for Clean Indoor Air or its member Partners helped to advance your program's activities.

- The website was very useful especially the resources section, the experiences and conferences gave us a chance to share / disseminate
- Project achievements. Lessons learned from other PCIA partners' experiences have been very helpful in advancing personal knowledge
- PCIA and members provided training and capacity building on stove tests, carbon financing options that are available.
- Networking with members, peer affirmation and encouragement
- Visit by USEPA co-coordinators boosted the project image
- Training on monitoring and evaluation impact evaluation
- Dissemination of results through paper presentation and posters, flyers at the conferences attended by the Regional Director SCI(EA)

5 Marketing / Promotional Activities

5.1. Describe successful approaches you used to promote/market the technologies or fuels of your project.

Public, group cooking demonstrations and as well as comparative performance demonstrations of various stoves. Radio spots and live radio talks were listeners can call in and ask questions or comment. Songs, skits, t- shirts and caps, flyers and calendars with messages. Talks to schools and institutions and actual cooking demonstrations. The model kitchen was a major hit as it showed all the interventions the project was promoting and any interested buyer could see how to place / install, and how they were being used. Once a week on market days cooking demonstrations were conducted in it. (Samples in Annex).

5.2. Describe any refinements you made to your communication/promotional approaches or materials over the course of the project.

- Moved from group / public demonstration to door to door campaign hich gave chance to monitoring on the stove performance, gain feedback on family health (asthmatic, eye irritation .
- From radio spot to live talk shows were listeners can call in and ask questions
- Sunews, calendars, flyers
- Had offer periods especially towards Christmas festivity to boost sales.
- From A4 size flyers to A5 colored info pack brochures.
- Belonging to networks- Kenya Energy and Gender network (Energy Kenya). EAEN(East African Environmental Net Work .
- Sunews 4,000 copies hard copies are distributed annually and a copy posted on the website (www.solarcookers.org)
- Put up a model kitchen with all the interventions in the Rabuor market with an average of 50 visitors per week
- Still photos to display during events
- Public address system to help mobilize the crowd and pass the IAP massage.
- Bata exchange for the interventions. (Poultry, cereals) for lack of cash.

- Branding of the project track.
- Cell phones for SCOREPS and printed contacts so they can be called back
- Community feedback through reviews forum.
- From small office space to bigger office space with adequate meeting room and storage facility.

5.2. Describe how you communicated to a broader audience (i.e., the global community) about your project and its goals, activities, and results (i.e., have you presented at conferences, published papers, etc.?)

- The website was very useful especially the resources section, the experiences and conferences gave us a chance to share / disseminate
- radio spot for announcements and live talk shows were listeners can call in and ask questions
- Sunews, calendars, flyers
- Sunews 4,000 copies hard copies are distributed annually and a copy on the website
- Public address system to help bring the crowd and pass the IAP massage.
- Dissemination of results through paper presentation and posters, flyers at the conferences attended by the Regional Director SCI(EA)

6 Lessons Learned / Sustainability / Replication

6.1. Overall project lessons learned (including a description of any major obstacles faced, how these were addressed, and how this learning fed back into the project moving forward).

- Weather. Flooding during rainy seasons, the roads are impassable, so the SCOREPS and installers go on foot and are assisted with mud boots and umbrellas. Follow up by phone rather than home visits.
- Culture is an impediment since it believed that the kitchen is the domain of women and not men but with continues education and awareness during the project life, using T-shirts, Flyers, and calendars, this was overcome.
- Technical challenges in the area include black cotton soil and lack stones it becomes difficult to install the stoves as these are required for the base of the stoves. Use of clay from old abandoned houses or anthills, or broken fired bricks.
- The installers at times encountered rodents and snakes in some the houses – this delayed work as they rodents / snakes were dealt with and then work proceeded.
- The ***upesi*** liners weigh 10kgs so it is a challenge to transport and store, stocked the stoves in homes as close as possible to the installers.
- Poverty. Encouraged them to do barter trade poultry and cereals for the interventions. Installment payments. Seek donors to assist the vulnerable
- Had high profile visitors in the course of the project life. Minister of Agriculture, Deputy Prime Minister, Rotarians etc
-

6.2. Specific lessons learned by Goal Area (per Section 2.0 and if relevant).

- **In quarter 9**, door to door campaigns have been effective in engaging the community in discussions on dangers of smoke
- Model kitchen has been effective in the interventions seeing is believing.
- Selective promotional offer e.g. Christmas promotion have been effective in enhancing market stimulation and technology acquisition.
- **In quarter 8**, the dangers of smoke massage is positively responded to by men when approached from the health angle
- Participatory review of project progress with the beneficiaries and implementers enhanced project acceptance and a sense of ownership.
- People start from the known to unknown. There is a process 3stones stove to ***upesi*** stove. Heat retention cooker, and then the new ones like gas cookers, the solar cookers and ethanol stoves
- Correct targeting is essential in communities were gender roles are defined. Women are associated with the kitchen and cooking issues.
- **In quarter 7.** Village Savings and Loan demystified the fear of loans and savings and enabled local capital generation for the business and meeting other felt needs.
- **In quarter 6.** Awareness does not always end up in sales of the interventions due to other factors
- Cost of asset e.g. stove or cell phone depends on the need it would serve and the priority of family spending
- The demand from areas outside the project is indicative of the national need. These were met as much as was possible.
- **Partnership** the requirement for joint project implementation plan impeded rather than enhancing project performance. There was unhealthy competition among the entrepreneurs and also in price setting. Weekly meeting during VSL assisted the two sides to bond and work amicably.

6.3. Describe the sustainability of your project within the target community (i.e. after your project ends, what elements have you put in place to ensure your results continue?)

- The installers and SCOREPS are in the VSL they are able collect money and continue with the business of the interventions. They have been able to borrow money from VSL and pay back with some interest.
- Knowledge and skills are within the community.
- The involvement of different actors e.g. Government departments, NGO's is a boost to project sustainability
- The model kitchen and the interventions there in can be used for the next 10 or so years
- The emergence of production centers /groups producers will enable current and future access

6.4. Describe any guidance you can provide for others looking to conduct a scale-up project or to replicate your approach.

- Plan to include the dangers of smoke / health lessons in the national education curriculum.
- Policy influence should be a goal for project implementers and should be implemented.
- Adopt integrated approach i.e. offer a menu of stoves

- Aim for a longer project period, such a project touches on culture and attitude change
- Periodic monitoring of IAP and the results used to help promote the project.

7 Conclusions

This section should discuss the major conclusions and findings from the project.

- Awareness levels on the dangers of smoke stands at 91% currently signifying that the strategies used in raising awareness and educating the public were successful.
- Smoke monitoring at the end of the project indicated that pollution was high in the evenings as this is when family meals were being cooked and also when everyone was indoors.
- That the project was gender sensitive in that 96.3 percent of the random sample in the study happened to be women.
- That there was sufficient market stimulation to the extent that there were more people joining in as promoters and installers that at the beginning of the project. There were less than 20 promoters at the beginning of the project and a the end there were 81 both for Practical Action and Solar Cookers International. Specifically SCI begun with 8 SCOREPS and ended up with a total of 28. It is significant to note that even men joined in the promotion and sales.
- The economy of the community was enhanced due to the gainful engagement and earnings of commissions from sales by those involved.
- Some project strategies especially the Village Savings and Loans (VSL) helped to demystify the fear of loans and encouraged savings and borrowing in the community a total of 8 such groups were in existence at the end of the project.
- Community health improved as evidenced in the anecdotal narrations by beneficiaries but also corroborated by reports from the health facilities in the area. This in turn boosted environmental awareness and conservation as less biomass was used up.
- There was positive synergy amongst all stakeholders, the government, the school system other development partners, the beneficiaries and this enhanced project acceptance and institutionalization.
- The promoters evolved innovative ways to meet the challenges they met in the field and this endeared them to the community and enabled more acceptance. For example: Where there were no stones or good clay they would use clay from an old abandoned house or clay from an anthill. Where cash was lacking they accepted in-kind contributions like grains and chickens.

- Adequate and timely disbursement of funds for project needs as well as the project site office boosted the image of the project.
- Since cooking is considered to be a gender based activity, they use of women as promoters and the use of several social media strategies enhanced achievement of the project.
- That socio – cultural barriers as well as poverty were still a major impediment towards technology acquisition. And that extensive marketing and promotion do not necessarily translate into big sales.

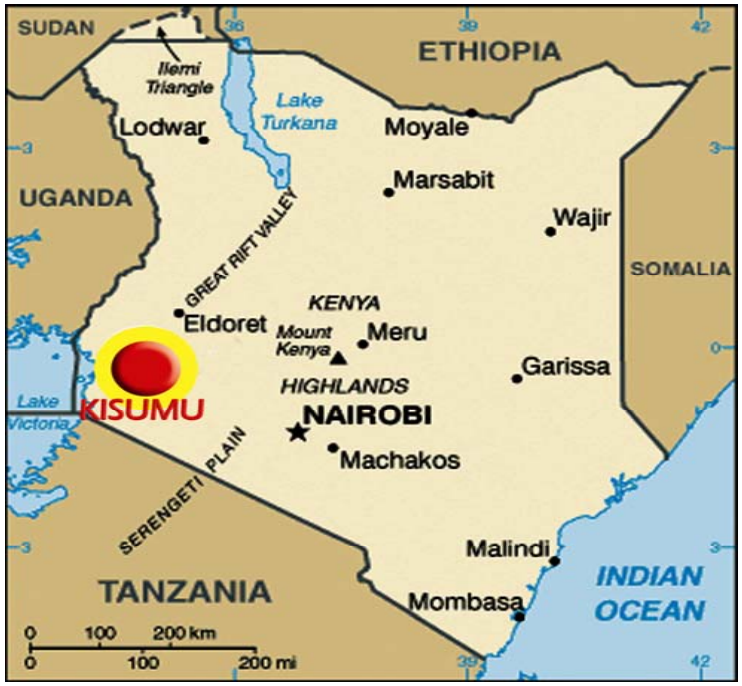
8 Financial Summary

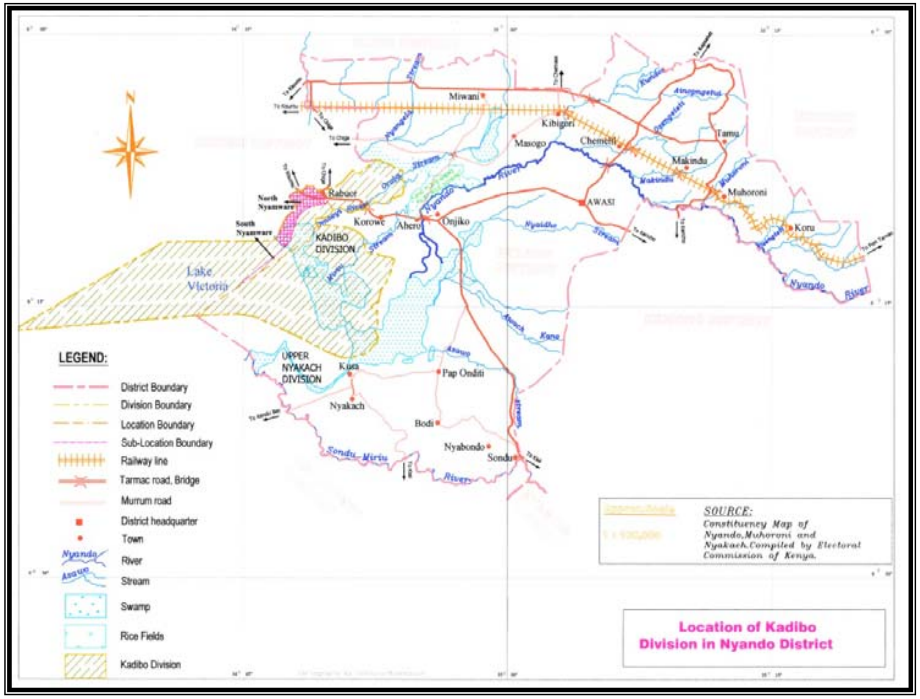
Project summary details *Enter the details as they appear in the grant award document.*	
Date of award (*as stamped on award)*	
Project period start and end dates	January 2009 – 31st July 2011
Actual start date (if different)	
Total USEPA budget	150,000 USD
Total co funding (if applicable)	80,000 USD
Total project budget	230,000 USD

Project budget details	Qrt 1	Qrt 2	Qrt 3	Qrt 4	Qrt 5	Qrt 6	Qrt 7	Qrt 8
Amount spent each quarter	17,144.06	13,833.85	10,487.54	18,032.02	27,019.17	21,891.17	23,244.32	23,178.18
Amount reimbursed each quarter	15,000	25,894.05	-	30,000	10,000	20,000	15,000	34,105.95
Amount remaining in project budget	135,000	109,106	109,106	79,106	69,106	49,105.95	34,105.95	NIL

Supplemental Materials

9.1. Map and Description of Project Location(s)
Map of Kenya and Major Towns.





Description of the project location,

Kadibo division is one of the divisions of Kisumu east District. This is an administrative unit and the central government representative is the District officer. The Division has 8 locations namely; Kochieng east ,Kochieng west, Kombura , Katho, Kanyagwal, Kawino south, Kawino north and Bwanda . Rabuor center is the headquarters of Kadibo division and it is 10 minutes drive to or from Kisumu on the main Nairobi Kisumu highway. To the west Kadibo division borders Lake Victoria, most of the land is flat and Kadibo is a flood prone area. It has sparse vegetation and black cotton soil that supports thorny bushes and euphorbia mainly for fencing homes and farms. Other common plants are aloe family of plants and sisal. The altitude of Kadibo is is 1200, rain fall 700-1200mm these are erratic and Kadibo suffers long dry spells.

The main economic activities include fishing and farming, petty businesses involving farm produce, fish, firewood and charcoal, smiths to repair stoves and fabricate new ones, peasant farming growing rice, sugarcane, millet and sometimes maize. Other activities include: formal employment in schools, government offices other NGOs, food vendors, transporters on bicycles and motorbikes and grocery shops.

The population of Kadibo stood at 61,326 at the last census and females comprise 52.3% of the population. Estimated number of households stands at 12,994. Most of the people inhabiting Kadibo are of Luo ethnicity and are Nilotic. Their diet comprises of three meals a day and the main staple is UGALI, made from maize meal. This is consumed with vegetables, fish, meat, chicken or beans etc. Famine to Luos mean not being able to have ugali at least twice daily.

Socially, they are friendly people and are stockers their culture and traditions and so polygamy is wide spread, large families are valued and Christianity is the main religion though split up into numerous sects.

Because of the situation described above, Kadibo people were prone to frequent flooding and there is a general tendency towards handout expectation especially from NGOs. They are lovable people and are positive to change as they are close to Kisumu city.

9.2. Project Images

Include any electronic images related to the implementation of the project. (Please provide a brief caption or description for each image provided).

COUNTING MONEY SAVED FROM THE PIGGY BANK AFTER USING THE INTERVENTIONS

CASHING IN ON THE STIMULATED MARKET, EVEN MEN ARE INVOLVED IN SALES

MODEL KITCHEN AT RABUOR MARKET

INSIDE THE MODEL KITCHEN

THE SCOREPS AND INSTALLERS WITH T- SHIRTS DEPICTING IAP MASSAGES

CONTROLLED COOKING TEST 1

Weighing fire wood

Bringing water to boil in ***upesi***

Cooking UGALI

CONTROLLED COOKING TEST 2

Bringing water to boil in three stone fire

Cooking UGALI

Weighing the remaining firewood from the two cooking tests.

FROM THIS TYPE OF LIGHTING KEROSIN

TO THIS TYPE OF LIGHTING SOLAR LAMP WITH CELL PHONE CHARGER

9.3. Project Testimonials

Include personal stories, quotations, or testimonials from: members of your project team; Partners; or consumers who benefitted from your project and that demonstrate how your project impacted the communities you served.

SONG

Wan wadhio ka solar, wan wadhi adiera, wan wadhio ka sola wan wadhi tedo gi chieng'

Kairo odong' kodi kanyo wan wadhi, wan adhi ka sola wan wadhi tedo gi chieng, kadondo odong' kodi kanyo, wan wadhi wan wadhi ka solar wan wadhi tedo gi chieng', ka tuoche odong' kodi kanyo wan wadhi wan wadhi ka sola wan wadhi tedo gi ching'!

We are going to the solar people, we are going to cook with the sun, if you chose to remain in smoke, that is your problem, if you chose to forage for fuel that is your problem, if you chose to remain with illness that is you problem, but as for us we are going to cook with the sun.

Millicent *"I can now address a large group of people. Different people come to my house to see the interventions. I recall my school days as I can write reports in English. I feel important when I carry my bag and leave the house – people say am going to the office. I have traveled to different areas promoting and teaching about smoke and the technologies. I have sold 82 interventions and I work with 4 other women as stockists and installers"*

Dorine Atieno is a widow from Kanyang' village in Kadibo. *She is one of the villagers who resisted change until she had a one to one discussion on dangers of indoor air smoke during a home visit session. At the time of the visit she was cooking and it was difficult to sit and talk in her kitchen. This provided a perfect illustration to the SCOREP who pointed out, the difficulty in breathing, coughs, sneezes, watering eyes and Dorine added " headaches, chest pain, general aches.." The two ended up with a hearty laugh.*

Dorine *ended up acquiring the stoves by giving up some of her grains in exchange. When visited she said " My life has changed a great deal since I switched from traditional stove to the new stoves. I do not struggle to forage for firewood as I did before, I have reduced on my spending on medicines. Look, my kitchen is clean and not smoky we have sat in here all along."*

Sellesa Kwogo a SCOREP wrote: " I am a trained trainer- wow – just 5 years ago I was a housewife and a peasant farmer but now I am a respected leader in my community. I know so much. I know that water has bacteria and I can kill them in my solar cooker, that smoke causes ill health and I can prevent that by using the interventions that I promote and teach about, that I can save money by using a multiple of the technologies especially the fireless cooker in combination with ***upesi***. When I go and teach I earn an allowance and when I sell a technology I have a commission. I tell you, my life has really changed and am able to take care of my family and also buy a few nice personal effects! I have joined my colleagues in saving at the VSL and we meet every Thursday this has really boosted our capital and we have bonded well with each other.

9.4 SAMPLES OF PROJECT COMMUNICATION/PROMOTIONAL MATERIALS

Sayings *" iro ok ber kod ngimani, ked kod iro" " smoke is not good for your health fight smoke"*

Chief of an area " mondwa wengegi leer!" " our women have bright clean faces" in reference to reduced exposure to smoke.

" Hera omedore" " Love has increased" a woman with two upesi stoves since her husband comes home earlier even as she is still cooking the evening meal. Previously he would come in late due to the house being smoky!

I have a new kitchen! My husband bought two upesi stoves and immediately pulled down the old one, my new stoves are perfect and I have a fireless cooker made from an old basin" I am very happy and healthy too.

FEEDBACK FROM PARTNERS.....

From: R. Johnson <rjohnson@lightgivesheat.org>
To: JOHN AMAYO joamayo@yahoo.com, **Cc:** marion anyango <marion_anyango@yahoo.com>
Sent: Monday, February 28, 2011 12:53 PM
Subject: Re: visit to kisumu

Hello,
Amber and I made it safely back to Jinja. We wanted to thank you for showing us your projects and teaching us all about solar cookers. We are now more excited than ever to start the project. You two were great hosts and we thank you so much! Look forward to working with you more!

-Rachel

Dear Margaret, How are you today? Of course, it is bright and sunny in Jinja and we have our CookIt out on the front lawn pasteurizing drinking water for the tailors.

I am writing to you today to say how very impressed we were by John and Julius' training last week. Their positive attitude and flexibility were wonderful. They were energetic and engaged with all of the groups, even in the rain and the mud. They worked so well with our staff and consistently used teamwork to achieve great results throughout the week. John and Julius were very knowledgeable about all of the cooking methods and were able to transfer this knowledge to our employees. The demonstrations and lessons were very interesting and John and Julius worked hard to ensure everyone's participation and understanding. We are very pleased with last week's training and look forward to working with everyone in the future. We will keep you informed about our group's progress and use of the CookIt and fireless basket.

Thank you again for your team's hard work and effort.

Amberle Reyes

Light Gives Heat, Jinja, Uganda

.....

From: "Wisecarver, Steven" <SWisecarver@ke.peacecorps.gov>
To: Paul Mollinger <pmollinger@gmail.com>; owino margaret <maggyapondi@yahoo.com>; Howard Crooks <hhc@africaonline.co.ke>; Jan-KenyaTraveler <kenyatraveler@gmail.com>; Larry Donahoo <larry.donahoo@yahoo.com>; Donna Donahoo <donahoosinkenya@hotmail.com>; "Radeny, Enos" <ERadeny@ke.peacecorps.gov>; Whitney Parsons <wlparsons@gmail.com>; "Vreyens, John" <JVreyens@ke.peacecorps.gov>; JOHN AMAYO <joamayo@yahoo.com>
Sent: Tuesday, August 9, 2011 10:38 AM
Subject: RE: Solar Day in Sindo

Paul,

This is awesome! Thanks for sharing. And thanks to Howard and the NECF for your support! This is exactly what the foundation wanted to do. I'm sending this in to Washington to go into the Africa Region newsletter. Keep up the excellent work! Steve

From: Paul Mollinger [mailto:pmollinger@gmail.com]
Sent: Saturday, July 02, 2011 8:28 AM
To: owino margaret; Howard Crooks; Jan- KenyaTraveler; Larry Donahoo; Donna Donahoo; Wisecarver, Steven; Radeny, Enos; Whitney Parsons; Vreyens, John; JOHN AMAYO
Subject: Solar Day in Sindo

Find attached both some photos and details on our Solar Day in Sindo on 18 June 2011. Once again a big thank you to all at Solar Cookers International (just great training) and our benefactors with the Nancy Ellen Crooks Foundation (absolutely a fine tribute Nancy). I can send more photos if wanted. Even a video clip of John from SCI leading the singing and dancing.

I also need to acknowledge my friend Pamela Ondongo at Rukongo. She was my chief organizer and the perfect hostess to all the guests. It is through her that we will maintain contact and follow-up on those that have the CookIts. I have already been at several homes to share a solar meal.

Paul Mollinger – Peace Corps
Sindo, Nyanza
Ecl 3:1
Psalms 121:1-8

----- Forwarded Message -----
From: Around the World in 80 Days <no-reply@wordpress.com>
To: joamayo@yahoo.com
Sent: Monday, November 15, 2010 11:31 PM
Subject: [New post] Solar Cookers International

Solar Cookers International

Yasmene Salhia | November 7, 2010 at 14:33 | Tags: cook, Developing country, Energy, Fuel, Kenya, Renewable, Solar, Solar cooker, Solar Cookers International, Solar energy, Technology, water | Categories: Uncategorized, get involved | URL: http://wp.me/p123QX-60

When you give money to charity, one often wonders ... does it make a difference? After spending time in Kenya with Solar Cookers International, I witnessed just how much of a difference it can make.

Solar cooking is the simplest, safest, most convenient way to cook food without consuming fuels or heating up the kitchen. Many people choose to solar cook for these reasons. But for hundreds of millions of people around the world who cook over fires fueled by wood or dung, and who walk for miles to collect wood or spend much of their meager incomes on fuel, solar cooking is more than a choice — it is a blessing.

Inexpensive, effective solar cookers can be life-saving tools, not only for cooking but also for pasteurization of drinking water. Over 1 billion people do not have access to safe water. Preventable waterborne diseases are responsible for approximately 80% of all illnesses and deaths in the developing world.

More than 4,000 children under 5 die from diarrhea ... everyday.

In partnership with local agencies, Solar Cookers International (SCI) has enabled thousands of families in multiple countries to cook food and pasteurize water with simple solar cookers. To ensure long-term project viability and access to affordable cookers, SCI works to incorporate solar cookers into local economies through establishment of independent solar cooker businesses run mostly by women.

Local participants are involved in project development from day one. SCI and its partners meet with community leaders and women's representatives for extensive discussions, question and answer sessions, and demonstrations of solar cooking's applicability to local foods.

Refugees and other displaced people frequently lack access to sufficient cooking fuels and safe drinking water. In refugee camps, when fuel rations are depleted, women and children often must walk for miles — risking rape and other dangers — to collect firewood from ever-diminishing sources. This physically arduous activity limits opportunity for education, participation in civic life, and income-generating activities. To save fuel, refugee families sometimes sacrifice nutritious foods like beans, which require hours of cooking, for quicker-cooking, less nutritious foods. They may even trade some of their meager food rations in exchange for firewood from neighboring populations, further reducing nutrition.

SCI has enabled thousands of refugee families in multiple countries to cook food and pasteurize water with simple solar cookers. Surveys reveal that the solar cookers allow them on average to save 27% of their firewood, while some report savings up to 70%. No longer forced to trade food rations for wood, refugees have been able to increase their food consumption by an average of four servings daily.

For more information on how you can MAKE A REAL DIFFERENCE, contact Solar Cookers International.

Watch the video on my YouTube page Living Borderless.

Hope you 'like' it!

Oywa Cookit

USEPA Project Staff

Home Visit

Retained Heat Cooker

Hole on the ground retained Heat Cooker

Happy Scorep –SELESSA

Twin Upesi installation

Drinking Pasteurized Water

Vulnerable Beneficiaries.

Exchanging Chicken for the stove

Situation Before

Sticks for the fire

Happy SCOREPS with a cake

RIAT College students

FEEDBACK FROM PARTNERS

RAMOGI INSTITUTE OF ADVANCED TECHNOLOGY,

P.O. BOX 1738, KISUMU.

14th April 2011

TO : THE REGIONAL DIRECTOR,

SOLAR COOKER INTERNATIONAL (EA)

P.O BOX 51190-0200, NAIROBI-KENYA

Dear Madam,

REF: APPRECIATION TOWARDS YOUR VISITATION TO OUR INSTITUTION

We highly appreciate your extended courtesy and demonstrated kindness you made by visiting our institution on Friday 1st April, 2011.

Thank you a million for taking your time talking with us amidst your most busy schedule. We sincerely appreciate the time you spent enlighting us on your programmes focusing on the solar cooking technologies. Your information about how the solar energy has been harnessed in various forms to achieve heat energy utilized in cooking, sterilization, steam boiling and environment management left us awash with rich solar technology ideas. Indeed, your advice was very helpful and gave us a new perspective on available opportunities.

We especially appreciate your offer to connect us to other networks such as Barefoot Solar in India, Habitat and the like.

We are highly elated by your acceptance to form collaboration with our institution towards the capacity building and training in solar energy. Currently a task force has been formed to draft the proposed memorandum of understanding (MOU) and is soon coming up with the document. A copy will be sent for your perusal and possible amendments.

Any additional suggestions you may have would be welcome.

Best Regards,

Diero Samuel Onyango

COORDINATOR RIAT ENERGY CENTRE

0721-541 684

Results Dissemination:

Eleventh World Renewable Energy Conference WREC X1 – Abu Dhabi, United Arab Emirates, September 2010.

Paper Title: Overcoming Challenges in Energy Technology Entrepreneurship

Margaret C.A. Owino – Regional Director, Solar Cookers International (EA), Tel: +254 20 4347295, +254722305895,

Email: maggyapondi@yahoo.com, sci@iconnect.co.ke

Abstract:

Introduction:

"Buy a wood stove?" what a joke – why should I pay money - a shallow hole in the ground and three stones is all I need and there – I have a stove!" This is the attitude that energy entrepreneurs have to contend with in selling a variety of cooking stoves. However, with an initial investment, an assurance on better health for the family, economic savings and other social benefits, a group of 25 dedicated women in the Kadibo area of Nyanza Province Kenya, are overcoming this attitude and are selling cook stoves.

Challenges

The main challenges included: Lack of health information, access to affordable technologies, cultural barriers, low income vice versa competing family needs, attitudes, sustainability and seed funding.

Technologies

With financial support from USEPA, Solar Cookers International (EA) and Practical Action (EA) are promoting a range of improved cook stoves aimed at reducing indoor air pollution. These are: improved wood stoves, "UPESI", a solar Cookit, Fireless cooker, Rocket stoves, improved charcoal stoves (KCJ) and Gas stoves. In addition to these the women also create eves, and for those who can afford they construct chimneys to assist in smoke extraction.

Methods

The methods used include: awareness raising, identification of local women who show interest, capacity building trainings on: marketing skills, record keeping, stove installation, making of the retained heat cookers and quality assurance. Further, they are educated on the dangers of smoke to health, and are equipped with promotional materials. In addition, they are enabled to access the initial stoves while linkages are made with Village Savings and Loans organizations that enable them to save and borrow money to grow their stoves business.

Results

After one year, there is 98% awareness in the area on the dangers of indoor air smoke. Adopters begin with the improved wood stove, then to fireless basket, solar cookers and finally to the more expensive gas stoves. 1,500 stoves have already been installed in homes most preferring a double stove installation. 200 fireless cookers sold and 90 solar Cookits, 30 gas stoves, 15 refills, and 1,300 eve spaces created and 1 chimney constructed. The women have together managed to save 150,000/= KSH - (2,000$), that they are loaned to grow their energy technology business. Two local potter's groups are now making and firing quality ceramic stoves in the area.

Lessons Learned

Challenges to cooking technology switch and adoption can be overcome: through social marketing, health education approach, demonstrated economic gains, affordable menu of stoves and consistent promotional educational activities in all sectors of the society and more so if the promoters are women. Seed funding, monitoring of initial activities and consistent promotions for a period of time is critical for nurturing successful sustainable energy entrepreneurship.

Some comments from visitor's book at the Kadibo office.....

4/2/10	Veronica Kirogo	Min. Agriculture Kilimo 0721434443	Excellent presentation looking forward to stronger partnership.
19/8/10	Andrew Were Asst Chief	Chiga	Very impressed by the improved kitchen
13/11/10 8/4/11	Alice Kamunge Timothy Kennedy	Vera beauty Collage 0711615595	Very good technology keep up good work lets save our planet Learnt a lot and surprised so much

Include a sample(s) of any project communications or promotional materials developed (e.g., fact sheets, brochures, articles, flyers, presentation Materials, etc.) With respect to implementation of your project. For materials provided, please include a brief description of the product and how it was used.

SOLAR COOKERS INTERNATIONAL

Solar Cooker Review

In This Issue

Solar Cookers International welcomes AmyJo Mattheis as Executive Director

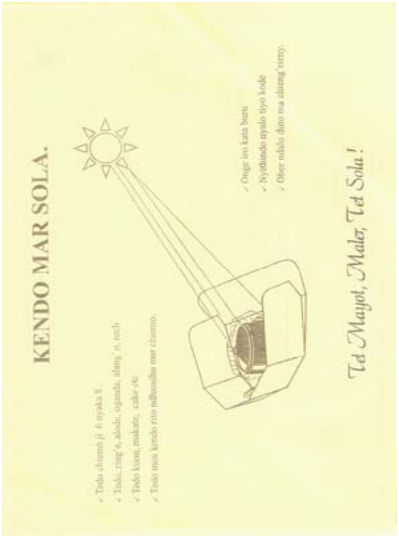
Improving women's finances with cleaner cooking technologies

SOLAR COOKERS INTERNATIONAL(EA)

SUNEWS

Promoting Health Through Clean Energy Technologies.

Iro! Moshi! Smoke! Omuosi! Erioki! Iyet!



KENDO MAR SOLA.

Ted Mayot, Mater, Tet Sola !

TED GI CHIENG

CHWAK PI MODHO GENG TUOCHI BIT NGIMANI KUNG PESA

SOLAR COOKERS INTERNATIONAL (EA)

Visit us on www.solarcookers.org

Promoting Clean Cook Stoves for Health and Wealth in East Africa

PROMOTING AND USING CLEAN COOK STOVES

FOR HEALTH AND WEALTH

TESTIOMONIALS:

RHODA APUNDA
Ministry of Agriculture Kadibo Division.
My Ministry is the one charged with promoting energy saving stoves. Every year we would select one location and work there, but since 2009, when USEPA project came we have collaborated and have reached 8 locations almost at the same time. USEPA has greatly enhanced my work and made me surpass my targets as required in the performance contract. Awareness is high, people with skills for installation are all over and the stoves can be accessed easily. I am the happiest of all collaborators. The improved stoves have saved the trees since they use less wood and give the trees chance to grow. The work USEPA and SCI have done is commendable. You have made my work easier because when a farmer is in need of these interventions I just phone the SCOREP or installer of the area and the work is done.

Molly Oruko (Village Savings Loans – VSL)
A baby born must grow; if your kind does not grow then you have to be worried. There is a tendency we have found while working in a community, if you're a visitor in the community and they have received handouts and information about something, when you ask them about it they will pretend they have never received such information. They think by answering in the negative they will receive something. You were connected to USEPA, so where you have reached, continue to grow, open shops with the assistance from the VSL. Welcome to Muhoroni .

VI-AGROFORESTRY
I will not say much but thank you for your work in Kadibo. We know what we have done has helped us. There are those who produce and sell but have nothing for the family. I have also got assistance from John and Leah; I have the solar lamp which has saved me from buying paraffin every day. Even though the project is ending let's keep the contacts alive. Thank you for the good work and relationship we have had.

Ministry of Public Health and Sanitation

Thank you to USEPA, when I walk in the community their kitchens is clean. The fireless basket really brings peace, we place food in it and when the man of the house comes back he gets hot food. You people have helped us reduce stress and high blood pressure in homes. There are less incidences of coughs and colds. That means your work is having an impact so I urge you to continue.

9.5. Manufacturing and Sales Information

Complete the following table for each type/model of stove promoted in this project.

Month *(please add the month)*		TT YEAR ONE	TT YEAR TWO			Grand Total
# Stoves produced	*Stove Type*					
	UPESI	**0**	**67**			**67**
	UHAI	**0**	**138**			**138**
	FIRELESS	**51**	**74**			**125**
	SOLAR COOKIT	**0**	**0**			**0**
	LPG - GAS					
# Stoves sold	*Stove Type*					
	UPESI	**187**	**927**			**1,114**
	UHAI	**12**	**61**			**73**
	FIRELESS	**52**	**33**			**85**
	SOLAR COOKIT	**349**	**233**			**582**
	LPG GAS	**3**	**1**			**4**
Total production, distribution costs		**2,630**	**980**			**3,610**
Sales revenue		**1,719**	**5646**			**7,365**
Notes: Notes: The solar CooKits came already assembled and so the production cost was not accounted for within the project, same as LPG Gas and solar lamps.Most of the products, such as charcoal stoves were also sourced ready made as well as the *upesi* and fireless cookers hence there was negligible production in the area and concentration was more on marketing and sales. Revenues were reinvested into the project costs.						

9.6. Stove Performance

Complete the following table with any stove testing/performance information you collected over the course of the project or provide a summary of the stove performance tests performed and their results.

Throughout the life of the project, several comparative stove performance tests were conducted in different dates for different reasons. Kitchen performance tests (KPT), Controlled cooking tests and even Water boiling tests (WBT)

- Tests comparing performance of 3 different types of solar cookers namely: Cookit, parabolic and pulsee cookers to boiled similar amounts of water or cook similar amounts of food.
- Comparing different types of wood stoves and measuring fuels before use (KPT), then measuring the wood left after food is cooked.
- Comparing performance of different types of fireless cookers, hole on the ground, basin, and basket containers to each other and the time taken to cook similar amounts of food.
- The results of the tests generated knowledge that was used by promoters to enhance sales of different types of interventions.

Below is one table that will demonstrate how the tests were recorded:

9. How are your stove(s) performing? *Please provide information on the type of laboratory and field testing you have performed to determine the effectiveness of your stove(s).*					
Type of Stove	**Test Performed** Kitchen Performance Test	**Date**	**Emissions**	**Fuel Use**	**Other Indicators Used**
Cookit	Baking cake took 2hrs	14/10/2009	None	Sun	
Uhai	Baking took 3.5 hrs,+ charcoal had to be bought, lit and the use of two pot when baking.	14/10/2009	As it was lit.	Charcoal	Burnt aroma of the cake
Upesi portable	Baking took 4 hrs,+ firewood had to be bought, lit and the use of two pot when baking. Had to be attended to and to maintain temperatures.	14/10/2009	Some	Firewood	Burnt aroma of cake

Type of stove	Test Performed Water Boiling Test	Date	Emissions	Fuel used	Other indicators
Cookit	Pasteurization of 3ltrs of water took 2hrs 50min	11/11/2009	None	Sun	WAPI melts at 65 Centigrade
Pulsee cooker	Boiling 3ltrs of water took 21mins.	11/11/2009	None	Sun	Bubbles
Parabolic	Boiling 3ltrs of water took 39mins.	11/11/2009	none	sun	Bubbles

9. How are your stove(s) performing? *Please provide information on the type of laboratory and field testing you have performed to determine the effectiveness of your stove(s).*

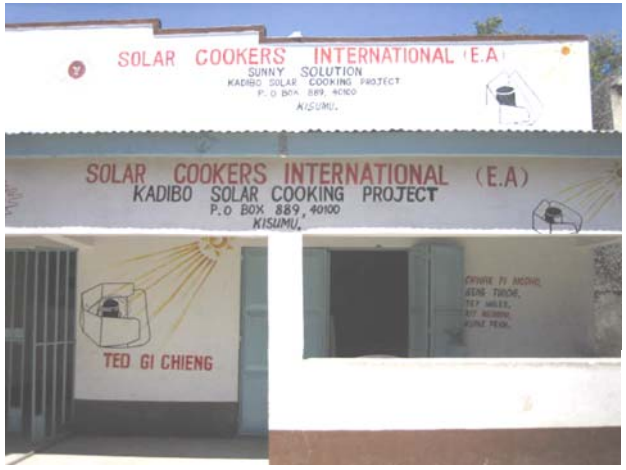
Type of Stove	Test Performed	Date	Emissions	Fuel Use	Other Indicators Used
Upesi	Kitchen Performance Test	30th June 2010		firewood	• Cooking of Ugali • Measure firewood 6kgs at 13hrs 18min. 6kgs • 13hrs 45min. Lighting the stoves • It took 15 min for the water to boil • It took 5 min for cooking the ugali • It took 0.8kg to cook the food (6kgs-5.2=0.8)
3 stones	Kitchen Performance Test	30th June 2010		firewood	• Cooking of Ugali • Measure firewood 6kgs at 13hrs 18min. 6kgs • 13hrs 45min. Lighting the stoves • It took 13 min for the water to boil • It took 6 min to cook the ugali • It took 1.5kg to cook the food(6kgs-4.5=1.5)

SOME IMAGES OF THE PROJECT

Demonstration at RIAT

The Pulsee Cooker

Testing cooked food



Site office in Kadibo

School Demonstration

Filming Cooked Food

Public Demonstration

Group Demonstration

Project Data

MONTH	TOTAL	QUARTER	apr-jun 09	jul-sep 09	oct-dec 09	jan-mar 10	apr-jun 10	jul-sep 10	oct-dec 10	jan mar 11	apr-jun 11	jul-sep 11	
AREA		***1***	**2**	**3**	**4**	***5***	**6**	**7**	**8**	**9**	**10**		**GT**
KADIBO COOKITS	427	***279***	5	8	17	2	49	42	16	9	-	-	**427**
ACCUMULATIVE		***279***	284	292	309	311	360	402	418	427	427		
OUTSIDE PROJECT AREA	164	***19***	4	2	15	10	10	5	76	13	1	9	**164**
ACCUMULATIVE	**229**	***19***	23	25	40	50	60	65	141	154	155		
RUNNING TOTAL		***298***	***307***	***317***	***349***	***361***	***420***	***467***	***559***	***581***	***582***		
KADIBO FIRELESS	50	**-**	14	6	17	1	2	2	2	2	2	2	**50**
ACCUMULATIVE		**-**	14	20	37	38	40	42	44	46	48		
OUTSIDE PROJECT AREA	30	**-**	4	4	4	1	2	5	6	1	-	3	**30**
ACCUMULATIVE		**-**	4	8	12	13	15	20	26	27	27		
RUNNING TOTAL		**-**	***18***	***28***	***49***	***51***	***55***	***62***	***70***	***73***	***75***		
Cookits	591	***298***	9	8	32	12	59	47	92	22	1	9	**589**
POTS & LIDS	672	***305***	11	58	43	12	63	47	94	22	6	11	**672**
WAPI'S	368	***298***	9	10	32	12	4	-	2	1	-	-	**368**
SCI BAGS	201	***20***	10	18	16	11	64	42	6	6	2	6	**201**
PLASTIC BAGS	3,904	***756***	108	310	386	144	708	568	636	168	12	108	**3,904**
BOOKS	626	***298***	15	10	34	12	59	74	92	22	1	9	**626**
fireless cookers	51	**-**	14	6	16	1	2	2	2	4	2	2	**51**

MONTH	TOTAL	QUARTER	apr-jun 09	jul-sep 09	oct-dec 09	jan-mar 10	apr-jun 10	jul-sep 10	oct-dec 10	jan mar 11	apr-jun 11	jul-sep 11	
in													
fireless cookers out	34	***4***	4	4	4	1	2	5	6	1	-	3	**34**
fireless cookers total	85	***4***	18	10	20	2	4	7	8	5	2	5	**85**
upesi liner BOUGHT	426	**-**	39	74	70	118	-	64	45	15	1	-	**426**
Upesi liner INSTALLED	-	**-**	-	-	-	-	-	-	-	-	-	-	**-**
upesi portable in	7	**-**	1	-	-	-	-	-	4	2	-	-	**7**
upesi portable out	4	***2***	-	1	-	-	-	-	-	1	-	-	**4**
upesi portable total	11	***2***	1	1	-	-	-	-	4	3	-	-	**11**
kcj	1	**-**	-	1	-	-	-	-	-	-	-	-	**1**
uhai jiko total	56	**-**	1	4	-	1	-	-	-	-	-	50	**56**
uhai jiko in	2	**-**	1	1	-	-	-	-	-	-	-	-	**2**
uhai jiko out	54	**-**	-	3	-	1	-	-	-	-	-	50	**54**
box cooker	8	***1***	-	-	-	-	5	-	1	-	-	1	**8**
gas	4	**-**	-	3	-	-	-	-	-	1	-	-	**4**
D-Light in	8	**-**	-	3	2	2	-	1	-	-	-	-	**8**
D-Light out	5	**-**	-	-	-	2	2	-	-	1	-	-	**5**
D-Light total	13	**-**	-	3	2	4	2	1	-	1	-	-	**13**
firefly	27								3	3	8	13	**27**
power pck jr	3								1	-	2	-	**3**
power													

MONTH	TOTAL	QUARTER	apr-jun 09	jul-sep 09	oct-dec 09	jan-mar 10	apr-jun 10	jul-sep 10	oct-dec 10	jan mar 11	apr-jun 11	jul-sep 11	
pck5watts	8										4	4	**8**
solar home system	1										1	-	**1**
moto poa gel in	5	**-**	-		3	2	-	-	-	-	-	-	**5**
moto poa gel out	7	**-**	-		4	-	-	-	1	-	-	2	**7**
moto poa gel total	12	**-**	-		7	2	-	-	1	-	-	2	**12**
moto poa stove in	2	**-**	-		1	1	-	-	-	-	-	-	**2**
moto poa stove out	2	**-**	-		1	-	-	-	-	-	-	1	**2**
moto poa stove total	3	**-**	-		2	1	-	-	-	-	-	1	**4**

-END OF REPORT -